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HOW LIVE STOCK IS HANDLED IN THE BLUEGRASS REGION OF KENTUCKY

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THE bluegrass region of Kentucky takes its name from the grass that long ago determined the trend of its agriculture, and that remains to this day the dominant factor in its farm business. Bluegrass grows luxuriantly on the richer soils of this region, and, if not held in check by cultivation, it holds its own against all enemies. For many years the farmers of central Kentucky have depended upon this grass for keeping up the fertility of the soil.

The characteristic system of farming developed here is essentially a grazing system, with tobacco, corn, wheat, clover, and a few minor crops supplementing the live-stock enterprises. The especially successful farmers among the 187 whose enterprises are discussed in this bulletin made beef cattle their leading stock enterprise, keeping sheep and hogs principally to utilize materials that otherwise would be wasted.

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IMPORTANCE OF KNOWING THE BEST PRACTICE.

THE object of this bulletin is to show how live stock is handled and fits into the farm organization in the bluegrass region of Kentucky. The average successful farm of any long-established type will have various kinds of live stock distributed in about the proportion that owners or operators in general believe will pay best. Thus, a gradual process of selection is going on constantly in all agricultural regions, and it should be to the farmer's interest to know the best practice in his community and to have explained the economic advantages that have been secured by such practice.

In this bulletin an effort has been made to bring out the fundamental practices that make for success with live stock in central Kentucky as determined by the practices of the more successful live-stock farmers of that region.

WHAT THE BLUEGRASS REGION FARMER MAY DO TO INCREASE HIS PROFITS THROUGH LIVE STOCK.

To understand clearly the relation that live stock has to profitable farming in this section the farmer must have in mind the actual conditions which confront him.

Conditions in the bluegrass regions of the South Central States are unusual. Much of the land is hilly; some of it mountainous. The composition of the soil, its occasional shallowness, and the gen-

eral lay of the land render it peculiarly subject to erosion. For this reason it is difficult to lay out fields in such a way as to allow a definite rotation of field crops, meadow, and pasture. Irregular areas must be kept in grass an indefinite time to prevent erosion or to build up the soil. In other words, the planning of the fields must be accommodated to the lay of the land, soil conditions, and the state of fertility of particular plats of ground. Each farm, then, has its peculiar problem in this respect, being unlike farms in much of the corn belt, where one farm is almost exactly like another in respect to these features and where fields may be laid out in any form suitable to the particular type of farming or crop rotation the farmer wishes to follow.

The conditions just mentioned explain in large part why live stock and tobacco are keys to successful farming in the blue-grass region. Blue grass keeps the soil from washing away and at the same time is a crop that can be utilized profitably by live stock. Land kept in blue grass a few years recuperates in productive power. It is thus a practical means of keeping up soil fertility. Tobacco, on the other hand, is an intensive crop. A large amount of time spent on a small area of productive land gives profitable returns. A normal crop of tobacco, requiring about 38 days of man labor per acre, will yield about 1,000 pounds of tobacco, which, at 13 cents per pound, would be worth \$130, while an acre of corn requiring about 4.5 days' labor and yielding 40 bushels per acre would, at 60 cents per bushel, be worth \$21. Thus a combination of grazing and tobacco farming with a few other crops used mainly for feed has proved to be the most generally profitable type of farming for this locality.

Since individual farms are so unlike, it is safe to make only the most general statements as to what farmers should do to increase their profits. In a survey of 187 blue-grass farms that was made in 1914 it was found that only about one-half of them were making the best use of their pastures. The importance of this fact will be realized when it is stated that on the average these farms had about 50 per cent of their area in pasture. Another outstanding factor in profitable farming is crop yield per acre. It was shown that crop yields increased with the increasing importance of live stock. For example, farms that had the equivalent of a 1,000 pound beef animal to each 5 to 7 acres of farm area almost uniformly had yields above the average. Farmers who had labor incomes¹ above \$500 mostly had some sheep on the farm, enough at least to utilize prod-

¹ Labor income—what is left the farmer after paying all expenses, including 5 per cent interest on his investment.

ucts that otherwise would have been wasted. Those who had labor incomes below \$500 and were counted unsuccessful, from a business standpoint, had practically no sheep. It is not contended that the number of sheep kept materially increased the farmer's income, but in this instance the sheep on the farm indicated good methods of management, and in this way the sheep became an indication of profitable farming.

It would be impossible to tell definitely just how many beef cattle, young stock, dairy cows, sheep, and hogs a farm of a given size should have. The most successful farmers visited seldom had less than 1,000 pounds of live stock for each 6 acres of farm land; or, if all the live stock on the farm were numbered in terms of a beef animal, it would mean that one beef animal was kept for every 6 acres of land. Farms that had labor incomes below \$500 and were rated as unsuccessful had an average of 1,000 pounds of live stock to about 10 acres of land.

The study made of these farms shows that when 50 to 60 per cent of the live stock was in beef animals the greatest profits were realized. The larger and cheaper farms of the region could handle even a greater percentage with profit. Among 130 farms very similar in type the group that had less than 30 per cent of live stock in beef animals made only \$442 labor income; the group that had 55 to 62 per cent made \$2,640; while those showing beef cattle above this percentage had only \$1,340. Excepting small farms of 40 to 100 acres in size, on which it was necessary to intensify with tobacco, the farms making highest profits had 45 to 75 per cent of the farm area in bluegrass. Of course, the physical conditions on each individual farm will determine largely what the percentage should be, but the averages given point out clearly the best practice.

Only under exceptional conditions can farming be made to pay on the high-priced farms without tobacco. From 8 to 12 per cent of the crop area of the most successful of these farms was in tobacco. The smaller tobacco farms—40 to 100 acres in size—had a larger percentage, 15 to 20 per cent.

The analyses of several individual farms given in the latter part of this bulletin are meant to point out concretely the best practice to follow on farms of various sizes. Even these individual farms, however, can not furnish a model for all farms of the region, yet they offer valuable suggestions and illustrate the value of applying the fundamental principles of farm management.

The disposition of live stock on the successful farms of various types studied in 1914 was found to be as follows:

Live stock kept on certain successful farms in the bluegrass region studied in 1914.

Type of farm. ¹	Number of records.	Size of farms.	Actual number of animals.							Equivalent number of 1,000-pound steers.
			Beef cattle.	Swine.	Milch cows.	Young stock.	Mules and horses raised to sell.	Sheep.	Poultry.	
		<i>Acres.</i>								
Tobacco.....	15	170	7	21	5	4	4	26	128	28
Tobacco-stock.....	31	234	29	82	5	12	3	52	136	68
General mixed.....	13	315	12	44	6	14	3	52	138	46
Stock with tobacco..	18	462	52	71	5	5	5	56	178	89
Stock with no tobacco.....	10	588	80	104	4	22	4	40	116	116

¹ The "tobacco" farm has 50 per cent or more of receipts from tobacco, with live stock least in importance. The "tobacco-stock" type of farm makes tobacco a major enterprise and gets 40 per cent or more of the receipts from this product. Live stock is second in importance. The "general mixed" farm makes all enterprises of about equal importance. The "stock with tobacco" type of farm makes live stock the major enterprise and tobacco secondary in importance.

UTILIZATION OF WASTE PRODUCTS BY MEANS OF ANIMALS.

On cheap land in a new and undeveloped section a profitable system of farming often develops which emphasizes a single enterprise, such as stock cattle or wheat. In these cases little thought is given to the utilization of by-products. Straw from the wheat field usually is burned. On grazing farms one class of live stock, such as sheep or stock cattle, pasture the entire area, little thought being given to the utilization of pasture by a combination of live-stock enterprises, or to the saving of manure. As soon as agricultural land becomes scarcer and higher in price, farming in most localities, however, must become more diversified. The organization must be such as to utilize by-products, to increase the value of field crops through utilizing the least salable products by feeding, to clean up the farm by proper grazing, and to increase the manure supply and make it more available. In the bluegrass region the best farmers understand these principles and an increasing number are putting them into practice. Many farmers there are now hogging down such crops as wheat, rye, and corn, in this way saving much of the expense of harvesting and marketing. It is commonly believed that by utilizing wheat in this way a better price can be obtained than by marketing the grain except when prices are abnormally high. The farmer may find also that the time saved by such a practice can be used profitably on other enterprises. Wheat and rye are hogged down from about the middle of June to the 1st of September, corn from September to December.

Sheep, horses, cattle, and swine all differ in their grazing habits. Sheep and horses will utilize the cured pasture under the snow where

cattle would starve. Sheep eat young weeds and tender tree sprouts which other kinds of stock will not eat. Hogs may be harmful or useful as grazing animals, depending on many conditions with which the experienced farmer is familiar.

FEEDING PRACTICE AND COST OF FEED FOR DIFFERENT KINDS OF ANIMALS COMMON ON BLUEGRASS FARMS.

In the corn belt, where feeding beef cattle is common, feeders usually are bought during the summer and fall, grazed until the corn is husked, and turned into the cornstalk field to clean up after the huskers, and to utilize as much of the corn fodder as possible. Gradually they are put on full rations of grain and fattened in three to five months for the market. In the bluegrass region, in addition to stock cattle raised on the farm, the common practice is to buy stock cattle in the fall. These mostly are bought from the surrounding mountain farms, some from local farmers who do not make a practice of feeding and grazing, and a few from the general city markets. They graze on grass during the fall months and in the winter when pasture is available, and to some extent on rye and wheat fields during a period of four to five months. In the winter corn stover, straw, hay, occasionally silage, and some corn are fed. This dry feed is sufficient to maintain the animals in good condition; they may even gain a little in weight. Often the corn unhusked is hauled from the shocks standing in the fields and scattered about on the least fertile places on pasture land or on other parts of the farm. Grazing may begin early in the spring, but not so intensively as to make short summer pasture. Frequently droughts occur in the summer. If the pasture is not grazed too much in the early spring, the bluegrass will get an early start, and even if dry will be nutritious. Marketing is done in the fall about the time buying is done. Occasionally a farmer is found who fattens his cattle on corn silage and concentrated feed during the winter. In all cases hogs follow the cattle to clean up the waste.

It was found that the more successful farmers keep some sheep to utilize feed products which are not eaten by other animals and to assist in keeping farms clear of weeds.

On these farms a local market usually may be had for corn stover, sorghum, millet, pea hay, etc. Straw, if baled, may be sold on the market. However, to make these products more generally marketable would require more attention to curing and handling them, besides hauling them to market in many cases over bad roads. Hence, as a rule, the farmer could not get profitable market prices for much of the material now fed to productive live stock; so that, in the case of these products, live stock creates a market by being a profitable means of their disposal. The present prices on such feed products

as corn, oats, and hay are governed very largely by prices demanded for similar products shipped in to supply the annual deficiency. Even corn and oats, raised quite extensively here, rarely become a surplus to be shipped out. For this reason the prices obtained and which the farmer usually can demand might not prevail if a much larger acreage of these products were grown. Such conditions must be taken into account in estimating the profitableness of the present amount of live stock carried on these farms.

The outstanding facts relative to the feeding practice and profitable utilization of feedable products on bluegrass farms are shown in the following averages, based on the estimates of 50 to 75 farmers:

Quantity and value of feed consumed by one steer or by an equivalent number of sheep or swine.

Kind of animals.	Feeding period of grain and concentrates.	Feeding period of hay and other forage.	Grain and concentrates fed.	Hay fed.	Straw and stover used.	Value of salable products consumed.	Estimated total value of feed.
Steer	Jan. 1-Apr. 7	Dec. 15-Apr. 25	<i>Pounds.</i> 840	<i>Pounds.</i> 200	<i>Pounds.</i> 1,600	\$14.10	\$28.90
7 sheep (equivalent to a steer)	Jan. 1-Mar. 20	June 1-Apr. 1	245	259	250	5.00	19.82
5 swine (equivalent to a steer)	July 20-Oct. 1 ¹	3,000	250	37.88	45.29

¹ This is the finishing period on hogs. They get enough grain and pasture at other times to keep them in good growing condition.

Grain and concentrates fed to steers and sheep are reduced to corn equivalent and figured at 70 cents per bushel, or \$1.25 per 100 pounds. Hay is figured at \$12 per ton, the average farm price, or 60 cents per hundredweight. Other rough forage is figured at \$3 per ton, the estimated average farm price for these products, or 15 cents per hundredweight. The average charge for pasture, all farms, was \$1.87 per month per 1,000-pound animal, for six months. Winter pasture charge is assumed to be about 60 cents per month for six months. Hogs are charged with one-half as much pasture as other animals.

Cattle and sheep get relatively little grain during the period of dry feeding. Stock cattle are kept on the farm about a year, generally from October to October, making their gains on bluegrass pasture. The average gain, according to the estimates of 75 farmers on the difference between buying and selling weights of cattle, was 314 pounds. The average of these farmers' estimates of the gain that ought to be secured under favorable conditions was 340 pounds. The period of summer pasture will range from 160 to 200 days, or an average of possibly 180 days, but, as has been stated, the pastures furnish some grazing during the winter.

According to the figures given above, sheep consume the least amount of salable products during the winter season. They graze

more during the year than any other class of animals, but a considerable amount of the products eaten are weeds which not only have no other value but are even positively injurious to farm crops. Assuming this to be the case, sheep are charged for pasturage at the same rate as stock cattle. Experience has taught the farmers that sheep, in order to be kept healthy and thrive well, must be changed from field to field frequently, so that the number than can be kept profitably on the farm is smaller than would otherwise be the case.

Swine consume more marketable grain than any other class of animals, but they also make larger gains from a given amount of feed. They also eat the undigested corn after cattle, and consume other unsalable products, such as spoiled corn or other spoiled grain, skim milk, etc. The experience of some farmers has shown that when hogs run most of the season on pastures having a mixture of grasses and clovers they will consume only about half the amount of grain they otherwise would. In bluegrass farming it is the general practice to allow hogs, as well as other kinds of live stock, to range over pretty much the entire farm during some part of the year. In the value of salable products consumed per 1,000-pound animal, grain concentrates, hay, straw, and corn stover have been included. The pasture charge is the average of the estimates of about 60 farmers in the localities studied.

In handling steers the farmer as a rule aims at least to sell at a cent a pound above cost price. Contracts to feed steers are occasionally made on this basis. On this basis the following statement would show the profits that might be expected from an 800-pound steer bought at 7 cents and sold at 8 cents when weighing 1,140 pounds:

Value of steer sold.....	\$91.20
Value of manure (estimated).....	6.50
Cost of steer.....	\$56.00
Value of feed (see p. —).....	28.90
Man labor.....	2.38
Horse labor.....	1.47
Interest on investment at 6 per cent.....	3.36
Insurance and risk.....	.50
	<hr/>
	92.61 97.70

Buying and selling on this basis, the clear profit on such a steer would be \$5.09, to which, however, would be added, in ordinary farm accounting, \$7.21, representing wages for man and horse labor and interest on investment. Thus, the total return would be \$12.30. In addition to this there is also a variable and often considerable profit on the hogs which follow the steers. The more successful farms, of course, would make a much better showing than this, which represents about the average of 178 farms.

In addition to this cash return one must consider the indirect benefits to the farm from live stock. As has been pointed out previously, live stock uniformly increases crop yields. It was found in the above-mentioned survey of Central Kentucky farms that the farmers who had the most live stock per hundred acres made the largest profits. Furthermore, live stock offers a reliable home market for much unsalable material and gives opportunity for utilization of much time that otherwise would be wasted.

It is the farmer who follows the best methods of animal husbandry and who is experienced in buying and selling who makes high profits. The fact that many blue-grass region farmers who gave records of their business failed not only to make any profits but had heavy losses shows that there is a great risk in the live-stock business and that only those who are experienced and who have capital or who have ample credit can safely carry on a large business of this kind.

It is a very difficult matter to compute, even approximately, actual profits on sheep or hogs alone. In the system of farming followed in this region, these two classes of animals are secondary in importance. As previously stated, they utilize much of what otherwise would be wasted. This being the case, a large increase in these animals on the farm would raise their feed cost very considerably. In this study it is assumed that the average successful farmer has through experience found approximately the proportion of various classes of animals that should be kept to secure, in the long run, greatest profits (see p. 5), so that actually, in measuring profits, the entire group of animals should be considered, rather than each class by itself. It is expected that each ewe on a farm will produce on the average one lamb a year, which at six months weighs 75 pounds, and will sell for \$6 to \$8, or an average of about \$7 apiece. As hogs are handled ordinarily in this region, a sow may be counted on to produce on the average about 6 pigs a year, which could be sold, at an average weight of about 250 pounds, for \$18 to \$20 each. The risk on hogs, due especially to cholera, is larger than on any other class of animals. Risk is a large item in handling sheep also.

Considering all classes of live stock on 178 farms in the blue-grass region, it was found that on the average these made a net profit of \$3.64 per 1,000 pound animal. The more successful farms, of course, made a much higher profit, while many, not so successful, showed a considerable loss on live stock. The fact, however, that the average of this group of farms paid the farmer the rent for his land, wages for his labor, and interest on his investment, in addition to this net profit, utilizing much material that otherwise would have been wasted, indicates that live stock is being handled at a profit in this region.

ANALYSES OF THE BUSINESS OF SIX INDIVIDUAL FARMS.

It is the purpose of the brief analyses of the individual farms that follow to present in a simple manner the outstanding features in the organization, and the main factors that influenced the profitability of the business for the year 1913-14.

Total receipts include sales and increase of inventories for the year, less purchases of live stock. Expenses include all current expenses, depreciation, decrease of inventories, and an estimated value for unpaid labor such as work done by the family, except the operator's labor. Interest on capital is not included. The farm income is the difference between total receipts and expenses. The labor income is what is left after deducting 5 per cent interest on capital from the farm income. The farm produces a part of the family living and furnishes a house to live in. This is in addition to the farm income or the labor income. If the operator is also the owner of the farm and has no debts against it, he has the entire farm income to spend or invest. In case he is a tenant, his farm income includes only his labor income and interest on his working capital.

FARM NO. 1.

Size of farm-----acres--	325	Live stock purchases-----	\$1,000
Total capital-----	\$30,000	Expenses-----	2,400
Working capital-----	8,200	Farm income-----	4,200
Investment in live stock----	5,200	Labor income-----	2,700
Total receipts-----	6,600		
Total receipts from live stock-----	4,500		

This is a successful stock farm of medium size. The basic stock enterprises were 32 beef cattle, 99 hogs, and 70 sheep. All the animals on the farm, which included a few cows, young stock, horses and poultry, would, from the standpoint of feed consumed and manure produced, be equal to about 81 beef animals. One hundred and fifty-four acres of the farm area was in pasture, or about 47 per cent of the farm area.

All the crops on this farm, except 15 acres of hay, were raised by cropper labor. There were 50 acres of corn and 8 acres of tobacco. No regular help was hired, but \$275 was spent for extra labor.

Crop yields were about 35 per cent above the average of the farms studied. The pasture area was well utilized—2 acres per 1,000 pounds of live stock.

This is a well-organized farm. The type and the general plan of management are well adapted to the cheaper, rolling lands.

FARM NO. 2.

Size of farm-----acres--	203	Receipts from live stock-----	\$3,720
Total capital-----	\$31,000	Purchases of live stock-----	580
Working capital-----	5,400	Expenses-----	1,620
Investment in live stock----	3,400	Farm income-----	3,600
Total receipts-----	5,220	Labor income-----	2,050

This is a smaller farm than the preceding one, but is organized in much the same way. The basic stock enterprises are about the same, 20 beef cattle, 100 sheep, and 39 hogs, equivalent to forty 1,000-pound animals out of a total of 52 on the farm. The crops on this farm were all raised by hired labor. Thirty acres of corn, 8 acres of meadow hay, 6 acres of oat hay, 3 acres of cowpeas, and 20 acres of tobacco were raised. The farm being smaller than the foregoing, good management is indicated by the comparatively large acreage of tobacco.

On this farm three laborers were hired for six months. A charge of \$100 was incurred for extra labor, and the value of unpaid family labor was \$86.

Diversity was less than on farm No. 1. As a rule in this section, it was found that the smaller farms had less diversity than the larger ones. This is due to the fact that in order to produce adequate income, the smaller farms must specialize more on some one or two enterprises.

About 50 per cent of the farm area was in pasture, the carrying capacity of which was about 2 acres per 1,000-pound animal, nearly twice the average.

For some reason, probably on account of severe local drouth, the average crop yields were nearly 20 per cent below the average of the farms studied. This was due to the particularly low yield of corn, which made only 20 bushels per acre. The hay yield, however, was above the average, being nearly $1\frac{1}{2}$ tons per acre. The tobacco was about an average crop, but showed excellent quality in the fact that 14 cents per pound was obtained for it. This was about 12 per cent above the average for that year.

FARM NO. 3.

Size of farm-----acres--	966	Receipts from live stock-----	\$13,300
Total capital (operator)-----	\$71,000	Purchases of live stock-----	5,500
Working capital-----	16,000	Expenses -----	8,600
Investment in live stock-----	12,000	Farm income-----	8,900
Total receipts-----	17,500	Labor income-----	5,350

Here we have an example of a large farm business. The operator owned 400 acres and rented 566 acres, for which he paid a cash rent of \$2,800. This is the stock type of farm, the major enterprises being 101 beef cattle, 300 sheep, and 97 hogs, equal to about one hundred and fifty-seven 1,000-pound animals out of a total of nearly 172 on the farm. About 40 per cent of the farm area was devoted to pasture. There were 160 acres in corn, 175 in wheat, 80 in rye, oats, and barley, and 160 in meadow. Thirteen acres of tobacco were raised by a cropper. Two regular hands were hired. The amount paid for extra labor was \$1,000

Crop yields were a little above the average. The farm showed excellent utilization of pasture area, the carrying capacity being about the same as on the preceding farm—2 acres per 1,000-pound animal.

FARM NO. 4.

Size of farm.....acres--	1, 700	Receipts from live stock----	\$14, 200
Total capital.....	\$200, 000	Purchases of live stock-----	13, 400
Working capital.....	30, 000	Expenses	9, 600
Investment in live stock----	18, 000	Farm income	15, 000
Total receipts.....	24, 600	Labor income	5, 000

This is a farm with still a larger business, mainly live stock. There were 247 beef cattle and 206 hogs, but no sheep. The number of all animals on the farm was about equal to 308 beef animals. There were 1,084 acres of pasture, or about 64 per cent of the farm area. The land was about the average in price (\$100 per acre) and but slightly rolling. Two hundred and forty-five acres of corn and 26 acres of tobacco were raised by croppers. The operator with his hired labor raised 40 acres of corn for silage, 170 acres of wheat, 20 acres of oats for hay, and 18 acres of meadow hay. Two men were hired as regular hands, costing each \$14 per month, with cottage and rations, and \$675 was spent for extra labor. The croppers received one-half the crops they raised, which were valued at \$4,200. The operator owned all of this land: Crop yields were 24 per cent above the average of the farms studied. The carrying capacity of pasture land was about 3 acres per 1,000-pound animal, or 33 per cent better than the average. This farm bought \$1,000 worth of corn fodder and hay and \$600 worth of concentrates. The buying of corn fodder was due partly, no doubt, to the fact that the corn was raised by croppers who got one-half of the products raised.

FARM NO. 5.

Size of farm.....acres--	34	Receipts from live stock-----	\$1, 275
Total capital.....	\$8, 700	Purchases of live stock-----	925
Working capital.....	3, 100	Expenses	475
Investment in live stock----	1, 900	Farm income	1, 800
Total receipts.....	2, 275	Labor income	1, 300

Farm No. 5 shows that even on the small farm it is possible to be quite successful by specializing in stock. Usually, however, the small farm emphasizes the tobacco crop and in some cases dairying, in this way intensifying farming in order to make the business sufficiently large to produce an adequate income.

This farm, however, specialized in jacks. Three were sold for \$1,450 and three bought for \$750. The work stock were mares and the receipts from mule colts were \$170. Only a few other animals were kept on the place. Seventeen acres, or 50 per cent of the land

area, was in pasture. There were 8 acres of wheat, yielding 32 bushels per acre, and bringing in \$256, while 3 acres of tobacco, yielding 1,500 pounds per acre, increased the income by \$720. These are exceptional yields, showing the possibilities on the small farm with plenty of manure available.

There was practically no hired labor, but \$100 of family labor was charged. Only \$20 worth of feed was purchased.

FARM NO. 6.

Size of farm-----acres--	340	Receipts from live stock-----	800
Total capital (landlord)-----	\$53,000	Purchases of live stock-----	1,400
Working capital (operator)-----	2,400	Expenses-----	3,300
Investment in live stock-----	1,700	Farm income-----	-200
Total receipts-----	3,100	Labor income-----	-320

This farm failed to meet all the expenses of its operation. It was a rented farm, for which the operator paid \$2,400 cash rent. The farm was valued at \$150 per acre and was in one of the best farming sections of the bluegrass region. The quality of the soil was excellent. There were 8 beef cattle, 160 sheep, and 47 hogs, which would be equal to about 42 beef animals. These probably would utilize well the 120 acres of pasture—about 3 acres per 1,000-pound animal. Crop yields were 7 per cent above the average of the farms studied.

What was the matter with the management of this farm that it failed to be profitable?

In the first place, the amount invested in live stock was not sufficient. There should have been 150 or 160 acres in pasture, which with the quality of soil represented could have carried at least 75 1,000-pound animals or their equivalent. Probably too many sheep were kept in proportion to other kinds of live stock. Half the number, or between 80 and 100, would have made a better balance. Instead of 8 beef cattle, this farm could have well carried 35 to 40 such cattle and 80 to 100 hogs, the rest being cows, horses, young stock, and poultry. This would have required a much larger investment in working capital, and it is possible that this tenant was not able to borrow it. In that case it would have been better for him to have rented a smaller farm and specialized in tobacco, or possibly in dairying, depending on the opportunity to market his product and his ability to handle this business. The fact that he subrented 50 acres, for which he received \$400, and share-rented 15 acres for tobacco, would further indicate that he was unable to handle a farm of this size.